CHARLES UNIVERSITY IN PRAGUE
Faculty of Pharmacy in Hradec Králové
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Title of diploma thesis:
**Thermal analysis of plasticized polyesters**
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Theoretical part of this thesis deals with the poly-α-hydroxy-acids as drug delivery systems in pharmacy, drug release from these polyesters and the factors affecting the rate of drug release and polymer degradation. Then, the influence of plasticizers on mechanical properties of polyesters is researched. The practical part is focused on the thermal analysis of these polyesters. The glass transition temperatures of linear poly(D,L-lactide-co-glycolide) 50/50 and terpolymers consist of poly(D,L-lactide-co-glycolide) branching with 3 %, 5 % and 8 % mannitol were measured by differential scanning calorimetry. Systems were measured without plasticization and with plasticization of 10 % and 20 % triacetin, 30 % triethylcitrate, 20 % ethylsalicylate, 20 % methylsalicylate and 20 % ethylpyruvate. The glass transition temperatures of non-plasticized systems significantly decreased with branching while no significant differences between the glass transition temperatures of polyesters with different degree of branching were observed. Using of all plasticizers resulted in decrease of the glass transition temperatures of polyesters. The glass transition temperature decreased while the concentration of plasticizer increased. The most effective plasticizers were triethylcitrate and ethylpyruvate.

**Keywords**: branched polyesters, plasticizers, glass transition temperature, drug release